

AI

--Table 2 below shows the process parameters used in a chamber that allows the film to be used as a capping layer in accordance with specific embodiments of the present invention. In the embodiments tested, the silicon and carbon were derived from a common compound, such as an organosilane-based compound. However, the carbon could be supplemented with other compounds, such as methane. Without limitation, suitable silane-based compounds could include: methylsilane (CH_3SiH_3), dimethylsilane ($((\text{CH}_3)_2\text{SiH}_2)$), trimethylsilane ($((\text{CH}_3)_3\text{SiH})$), diethylsilane ($((\text{C}_2\text{H}_5)_2\text{SiH}_2)$), propylsilane ($\text{C}_3\text{H}_8\text{SiH}_3$), vinyl methylsilane ($(\text{CH}_2=\text{CH})\text{CH}_3\text{SiH}_2$), 1, 1, 2,2-tetramethyl disilane ($\text{HSi}(\text{CH}_3)_2\text{-Si}(\text{CH}_3)_2\text{H}$), hexamethyl disilane ($((\text{CH}_3)_3\text{Si-Si}(\text{CH}_3)_3)$), 1, 1, 2, 2, 3, 3-hexamethyl trisilane ($\text{H}(\text{CH}_3)_2\text{Si-Si}(\text{CH}_3)_2\text{-SiH}(\text{CH}_3)_2$), 1, 1, 2, 3, 3-pentamethyl trisilane ($\text{H}(\text{CH}_3)_2\text{Si-SiH}(\text{CH}_3)\text{-SiH}(\text{CH}_3)_2$), and other silane related compounds. In addition to organosilanes exemplified by the above list, organosiloxanes such as tetramethyl cyclotetrasiloxane may be used, with or without the addition of another oxygen source, for the deposition of CDO type caps. For the purpose of this invention, the term "organosilane" as used herein includes any silane-based compound having at least one carbon atom attached, including the preceding list, unless otherwise indicated. In Table 2, the compound used was trimethylsilane ("3MS"). A process gas, such helium, nitrogen, or oxygen was present and might assist in stabilizing the process, although other gases could be used.--

Please amend the paragraph at page 14, line 19 as follows:

A2

--To form the capping layer in the preferred process regime, a silicon source such as trimethylsilane may be supplied to a plasma reactor, specifically a reaction zone in a chamber that is typically between the substrate surface and the gas dispersion element, such as a "showerhead," commonly known to those with ordinary skill in the art. Typical commercial PECVD chambers that may be used to practice embodiments of this invention to cap an ELK film, are the DxZ and Producer chambers produced by Applied Materials, Inc. of Santa Clara, California. Alternately, the entire stack (i.e. formation of ELK film and PECVD cap) may be formed in an integrated atmospheric deposition and vacuum cap system as described above. The sequence of operation of a commercial PECVD chamber is well known and needs no explanation